

U.S. Department of the Interior  
Bureau of Land Management  
White River Field Office  
73544 Hwy 64  
Meeker, CO 81641

## ENVIRONMENTAL ASSESSMENT

**NUMBER:** CO-110-2006-115-EA

**CASEFILE/PROJECT NUMBER:** COC-61458 (# 4S-95-1-21)

**PROJECT NAME:** APD for well # 4S-95-1-21

**LEGAL DESCRIPTION:** T4S, R95W, NWNE sec.1 (# 4S-95-1-21), 6<sup>th</sup> P.M.

**APPLICANT:** XTO ENERGY INC.

**ISSUES AND CONCERNS** (optional): *Well pad for # 4S-95-1-21 is on private (SW corner of pad cut slope on BLM), but would be located in close proximity to both Piceance Creek and Cow Creek.*

### **DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:**

***Background/Introduction:*** On site for # 4S-95-1-21 (Cow Creek) was conducted on 3/27/06.

**Proposed Action:** Applicant proposes to construct well pad, access road, and associated pipeline for one well. The well pad for # 4S-95-1-21 would be located on private land, but the southwest corner of the pad cut slope would be on BLM (0.05 ac.). Access road and pipeline route for # 4S-95-1-21 (2117') would be on private lands. Total disturbance is approximately 6 acres with 0.05 acres on BLM administered land.

**No Action Alternative:** The project would not be approved, therefore there would not be any environmental impacts

**NEED FOR THE ACTION:** To respond to the applicants proposed action to exercise lease rights and develop hydrocarbon reserves.

**PLAN CONFORMANCE REVIEW:** The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

Date Approved: July 1, 1997

Decision Number/Page: Page 2-5

Decision Language: “Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values.”

## **AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES / MITIGATION MEASURES:**

**STANDARDS FOR PUBLIC LAND HEALTH:** In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. These findings are located in specific elements listed below:

## **CRITICAL ELEMENTS**

### **AIR QUALITY**

*Affected Environment:* The entire White River Resource area has been classified as either attainment or unclassified for all pollutants, and most of the area has been designated prevention of significant deterioration (PSD) class II. The proposed action is not located within a ten mile radius of any special designation air sheds or non-attainment areas. The air quality criteria pollutant likely to be most affected by the proposed actions is the level of inhalable particulate matter, specifically particles ten microns or less in diameter (PM<sub>10</sub>) associated with fugitive dust. In addition, slight increases in the following criteria pollutants: carbon monoxide, ozone (secondary pollutant), nitrogen dioxide, and sulfur dioxide may also occur during construction due to the combustion of fossil fuels associated with construction operations. Also, non-criteria pollutants such as visibility, nitric oxide, air toxics (e.g. benzene) and total suspended particulates (TSP) may also experience slight short term increases as a result of the proposed actions (no national ambient air quality standards have been set for non-criteria pollutants). Unfortunately, no monitoring data is available for the survey area. However, it is apparent that current air quality near the proposed location is good because only one location on the western slope (Grand Junction, CO) is monitoring for criteria pollutants other than PM<sub>10</sub>. Furthermore, the Colorado Air Pollution Control Division (APCD) estimates the maximum PM<sub>10</sub> levels (24-hour average) in rural portions of western Colorado like the Piceance Basin to be near 50 micrograms per cubic meter (µg/m<sup>3</sup>). This estimate is well below the National Ambient Air Quality Standard (NAAQS) for PM<sub>10</sub> (24-hour average) of 150 µg/m<sup>3</sup>.

*Environmental Consequences of the Proposed Action:* Cumulative impacts detrimental to air quality in the Piceance Creek Basin can be expected as carbon monoxide, ozone

(secondary pollutant), nitrogen dioxide, particulate matter, and sulfur dioxide levels are elevated due to increased oil and gas development. Construction equipment producing elemental and organic carbon via fuel combustion combined with surface disturbing activities that leave soils exposed to eolian processes will both increase production of particulate matter (PM<sub>10</sub>) during construction. Elemental and organic carbon existing in the air as PM<sub>10</sub> can reduce visibility and increase the potential of respiratory health problems to exposed parties. However, following initial construction, suggested mitigation, and successful interim reclamation, criteria pollutant levels should return to near pre-construction levels.

*Environmental Consequences of the No Action Alternative: None*

*Mitigation:* The operator will be responsible for complying with all local, state, and federal air quality regulations as well as providing documentation to the BLM that they have done so. To minimize production of fugitive particulate matter (fugitive dust) from associated access roads, it is suggested that vehicle speeds not exceed 15 mph *or* dust plume should not be visible at appropriate designated speeds for road design. In addition, the application of a BLM approved dust suppressant (e.g. water or chemical stabilization methods) is recommended during dry periods when dust plumes are visible at speeds less than or equal to 15 mph. Surfacing access roads with gravels would also help mitigate production of fugitive particulate matter. It is recommended that land clearing, grading, earth moving or excavation activities be suspended when wind speeds exceed a sustained velocity of 20 miles per hour. It is recommended that disturbed areas be restored to original contours, and revegetated as outlined in the vegetation portion of this EA.

To reduce production of fugitive particulate matter originating from well pad and associated stockpiled soils (long term storage) interim reclamation is suggested as outlined in the water quality section of this document. If interim reclamation is not practical (e.g. completion of drilling operation will require an extended period time (multiple well pads)), stockpiled topsoil should be covered with biodegradable fabrics such as (but not limited to) jute netting/Curlex and seeded with a BLM approved seed mixture (see vegetation section of this document). Furthermore, it is recommended that soils stockpiled for short durations (e.g. during road/pipeline construction/maintenance) be wetted during dry periods to reduce production of fugitive particulate matter.

Construction equipment will be maintained in good operating condition to ensure that engines are running efficiently. Vehicles and construction equipment with emission controls will also be maintained to ensure effective pollutant emission reductions.

## **CULTURAL RESOURCES**

*Affected Environment:* Well # 4S-95-1-21 well pad, access and well tie pipeline have been inventoried at the Class III (100% pedestrian) level (Reed and Hays 2006, Compliance Dated 6/13/2006) with no new cultural resources reportedly identified in the inventoried area. Historic road 5RB 3752 is directly affected by a portion of the proposed well tie and access road reroute.

*Environmental Consequences of the Proposed Action:* The proposed project will impact a small portion of site 5RB 3752, which has been determined not eligible to the National Register of Historic Places (NRHP) in consultation with the Colorado State Historic Preservation Office (SHPO). Site 5RB 3752 is in current use and is routinely upgraded and maintained therefore, the proposed action will not adversely affect the site.

*Environmental Consequences of the No Action Alternative:* There would be no new impacts to cultural resources under the No Action Alternative.

*Mitigation:* 1. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

2. Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

## **INVASIVE, NON-NATIVE SPECIES**

*Affected Environment:* Noxious weeds known to occur at or the project area include houndstongue (*Cynoglossum officinale*), mullein (*Verbascum thapsus*), bull thistle (*Cirsium vulgare*), musk thistle (*Carduus nutans*) and yellow toadflax (*Linaria vulgaris*). The invasive alien annual cheatgrass occurs throughout the project area in association with unvegetated earthen disturbance along roads, wells, and pipelines.

*Environmental Consequences of the Proposed Action:* The proposed action will create about 0.05 acres of new earthen disturbance on BLM administered lands, which if it is not revegetated with desirable species and /or treated with herbicides to eradicate noxious weeds/ cheatgrass, will be invaded and dominated by noxious weeds/cheatgrass, increasing the potential for fire and the consequent further proliferation of cheatgrass. Noxious weeds could also spread from the project sites to surrounding native rangelands resulting in a long term negative impact. The resulting proliferation of noxious weeds/cheatgrass will perpetuate a downward cycle of environmental degradation that will be largely irreversible. There will be a low likelihood of long term negative impact if the proposed mitigation is properly implemented.

*Environmental Consequences of the No Action Alternative:* There will be no change from the present situation.

*Mitigation:* The operator will be required to monitor the project area for a minimum of three years post disturbance and eradicate all noxious and invasive species which occur on site for the life of the project using materials and methods approved in advance by the Authorized Officer.

## **MIGRATORY BIRDS**

*Affected Environment:* Well pad # 4S-95-1-21 is located at the confluence of Piceance and Cow Creeks adjacent to paved RBC 5 and the well-traveled Cow Creek road. The proposed site can be characterized as a disturbed agricultural valley site supporting a relatively sparse rabbitbrush-big sagebrush community. The westernmost margin of the pad would involve steep adjacent slopes which are composed of a mountain shrub community dominated by mountain mahogany, serviceberry and snowberry. Birds of higher conservation interest that fulfill nesting requirements in the project area include Virginia's warbler and green-tailed towhee in the mountain shrub type. Although both species are well distributed and common to abundant in the White River Resource Area's extensive shrubland habitats, these very steep slopes likely support low nest densities. No higher conservation interest birds use involved valley vegetation and nesting is likely relegated to the most common grassland generalists (e.g., vesper sparrow, western meadowlark). Streamside habitats along Cow Creek (intermittent at the mouth) and Piceance Creek (typically losing flow during the mid to late summer months) are poorly differentiated from adjacent valley agricultural lands and support low densities of the most common and generalized riparian species (e.g., song sparrow, Brewer's blackbird).

The Piceance Creek valley is used by waterfowl and other migratory birds throughout the year. The development of reserve pits that contain fluids have attracted waterfowl use, particularly during the migratory period (i.e., local records: mid-March through late May; mid-October through late November) and likely have similar attraction for migratory and resident passerines.

*Environmental Consequences of the Proposed Action:* The project is scheduled to be initiated in late July and would involve only the latest extreme of the 2006 breeding season (i.e., late attempts and renesting). Considering the proximity of the site to well-traveled roads and the suboptimal conditions for nesting habitat, the proposed project would disrupt few nesting

attempts and likely none by migratory species of higher conservation interest, regardless of project timing.

There have been several recent instances of migratory waterfowl having contacted drilling or frac fluids stored in reserve pits during or after completion operations and are suffering mortality in violation of the Migratory Bird Treaty Act. The extent and nature of the problem is not well defined, but is being actively investigated by the federal agencies and the companies. Until the vectors of mortality are better understood, management measures must be conservative and relegated to preventing bird contact with fluids that may pose a problem.

*Environmental Consequences of the No Action Alternative:* The no-action alternative would have no conceivable influence on nesting functions of migratory birds.

*Mitigation:* It will be the responsibility of the operator to effectively preclude migratory bird access to, or contact with, reserve pit contents that possess toxic properties (i.e., through ingestion or exposure) or have potential to compromise the water-repellent properties of birds' plumage. Exclusion methods may include netting, the use of "bird-balls", or other alternative methods that effectively eliminate migratory bird contact with pit contents and meet BLM's approval. It will be the responsibility of the operator to notify the BLM of the method that will be used to eliminate migratory bird use two weeks prior to initiation of drilling activities. The BLM-approved method will be applied whenever such pits contain fluids other than fresh water. All lethal and non-lethal events that involve migratory birds will be reported to a White River Field Office Petroleum Engineer Technician immediately.

#### **THREATENED, ENDANGERED, AND SENSITIVE ANIMAL SPECIES** (includes a finding on Standard 4)

*Affected Environment:* There are no threatened, endangered or sensitive animal species that are known to inhabit or derive important use from either pad location.

*Environmental Consequences of the Proposed Action:* The proposed action would have no conceivable influence on special status animal species.

*Environmental Consequences of the No Action Alternative:* The no-action alternative would have no conceivable influence on special status animal species.

*Mitigation:* None

*Finding on the Public Land Health Standard for Threatened & Endangered species:* The proposed action would have no conceivable influence on populations or habitats associated with federally listed animals and would, therefore, have no potential to influence the status or application of applicable land health standards.

#### **WASTES, HAZARDOUS OR SOLID**

*Affected Environment:* There are no known hazardous or other solid wastes on the subject lands. No hazardous materials are known to have been used, stored or disposed of at sites included in the project area.

*Environmental Consequences of the Proposed Action:* No listed or extremely hazardous materials in excess of threshold quantities are proposed for use in this project. While commercial preparations of fuels and lubricants proposed for use may contain some hazardous constituents, they would be stored, used and transported in a manner consistent with applicable laws, and the generation of hazardous wastes would not be anticipated. Solid wastes would be properly disposed of.

*Environmental Consequences of the No Action Alternative:* No hazardous or other solid wastes would be generated under the no-action alternative.

*Mitigation:* The applicant shall be required to collect and properly dispose of any solid waste generated by the proposed actions.

## **WATER QUALITY, SURFACE AND GROUND** (includes a finding on Standard 5)

*Affected Environment:* The proposed action is located entirely within the Middle Piceance Creek watershed (fifth level watershed). Sixth and seventh level watersheds likely to be impacted by the proposed actions are Piceance Creek and Cow Creek. The proposed location is situated on private land at the confluence of Cow Creek and Piceance Creek on a detached floodplain (alluvial deposits) of Cow Creek and Piceance Creek. Both Cow Creek and Piceance Creek near the proposed location have undergone recent channel incision probably due to a combination of land management (irrigation, cattle grazing), climatic conditions, soil characteristics and geology. Cow Creek is a perennial tributary (with intermittent reaches) to Piceance Creek. Piceance Creek is a perennial tributary to the White River which is a tributary to the Green River in Utah (tributary to the Colorado River).

Surface water quality in Piceance Creek is described as mixed bicarbonate in the upper drainages and as sodium bicarbonate in the lower drainages (BLM, 2003). Chemical components found in surface waters are attributed to the weathering of surficial materials in the area. The principal ionic constituents include sodium, calcium, magnesium, bicarbonate, sulfate, chloride, potassium, and fluoride (Tobin 1987). Sodium, bicarbonate, and sulfate levels generally decrease during the spring snowmelt runoff because of the increased amount of water, while chloride and fluoride remain essentially constant. Calcium and magnesium concentrations show small decreases, and potassium increases during the snowmelt. During the irrigation season, sodium becomes concentrated, and calcium and magnesium concentrations increase. Sediment is probably the most visible water-quality characteristic of streams in the Piceance Basin. The more sediment suspended in the water, the more turbid or muddy the stream appears. In addition, the characteristics of the landscape, such as steep hillsides, valley floors, alluvial fans, and gullies are the result of sediment erosion, transport, and deposition (Norman 1987).

The “Status of Water Quality in Colorado –2006” (CDPHE 2006b) and Regulation No. 37 Classifications and Numeric Standards for Lower Colorado River Basin (CDPHE 2005a) were reviewed for information relating to drainages impacted by the proposed action. Table 1 shows the affected watersheds and associated water quality stream segments to be impacted by the proposed actions.

**Table 1:**

<b>Watershed</b>	<b>Stream segment</b>	<b>Drainage Basin</b>	<b>Use Protected</b>	<b>303(d) listed</b>	<b>M&amp;E listed</b>	<b>Beneficial Use Designations</b>
Piceance Creek	15	White River	UP	Not listed		Aquatic Life Warm 2; Recreation 1b; Agriculture
Cow Creek	16					Aquatic Life Warm 2; Recreation 2; Agriculture

(CDPHE, 2006b)

Stream segment 15 of the White River Basin is defined as the mainstem of Piceance Creek from the Emily Oldland diversion dam to the confluence with the White River. Stream segment 15 is NOT designated as “Use Protected”. An intermediate level of water quality protection applies to waters that have not been designated outstanding waters or use-protected waters. For these waters, no degradation is allowed unless deemed appropriate following an antidegradation review (CDPHE, 2006b).

Stream segment 16 of the White River Basin is defined as all tributaries to Piceance Creek, including all wetlands, lakes, and reservoirs, from the source to the confluence with the White River, except for the specific listings in segments 17, 19, and 20. The State has classified stream segment 16 as "Use Protected". The antidegradation review requirements in the Antidegradation Rule are not applicable to waters designated use-protected. For those waters, only the protection specified in each reach will apply (CDPHE, 2006b).

Newly promulgated Colorado Regulations Nos. 93 and 94 (CDPHE 2006c and 2006d, respectively) were also reviewed for information related to the proposed project area drainages. Regulation No. 93 is the State’s Section 303(d) list of water-quality-limited segments requiring Total Maximum Daily Loads (TMDLs). The 2006 303(d) list of segments needing development of TMDLs (CDPHE 2006c) includes two segments within the White River - segment 9b, specifically the Flag Creek portion (for impairment from selenium with a low priority for TMDL development) and segment 22, specifically West Evacuation Creek (Wash), and Douglas Creek (sediment impairments with a low priority for TMDL development). Regulation 94 is the State’s list of water bodies identified for monitoring and evaluation (CDPHE 2006d), to assess water quality and determine if a need for TMDLs exists. The list includes two White River segments that are potentially impaired – 9 (Flag Creek-pH) and 22 (Soldier Creek- sediment).

Ground Water: Surface geology at all of the proposed locations is Tertiary in age (Parachute Creek Member of the Green River Formation) and consists of interbedded oil shale, marlstone and siltstone. The Parachute Creek Member of the Green River Formation is located at the base of the upper aquifer system. Sodium and bicarbonate are the dominant dissolved constituents in the water from the upper Parachute Creek Member of the Green River Formation (Tobin, 1987). Alluvial material associated with the Piceance Creek Alluvial Aquifer is found in the drainage

bottom adjacent to Piceance Creek. Alluvial aquifers are recharged by deeper ground water as well as infiltration of snowmelt and rain. Water quality in alluvial aquifers is primarily a function of local geology and communication with deeper groundwater in bedrock aquifers.

A review of the US Geological Survey Ground Water Atlas of the United States (Topper et al., 2003) was done to assess ground water resources at the location of the proposed action. The proposed action is located in the Piceance Creek structural basin. Primary hydrogeologic units within the Piceance Basin are listed in table 2.

**Table 2:**

Summary of Hydrogeologic Units						
Hydrogeologic Unit	Stratigraphic Unit	Physical Description	Thickness (ft)	Hydraulic Conductivity (ft/day)	Yield (gpm)	TDS mg/L
<b>Upper Piceance Basin aquifer</b>	Uinta Formation	sandstone, fractured siltstone, fractured marlstone	0 – 1,400	<0.2 to >1.6	1- 900	500-1,000
Mahogany confining unit	Green River Formation	dolomitic marlstone and shale	500-1,800	<0.01	<25	NL
<b>Lower Piceance Basin aquifer</b>	Green River Formation	shale, fine-grained sandstone, fractured marlstone	0 – 1,870	<0.1 to >1.2	1-1,000	1,000-10,000
Basal confining unit	Green River Formation, Wasatch Formation	claystone, siltstone, clay rich oil shale, marlstone, channel sandstone	0-6,800	<0.01	<10-100	NL
<b>Fort Union aquifer</b>	Fort Union Formation	Coarse-grained sandstone	Very thin	NL	NL	NL
<b>Mesaverde aquifer</b>	Mesaverde Group	sandstone interbedded shale and coal	Averages 3,000	0.0001-1.0	NL	NL
Mancos confining unit	Mancos Shale	mostly shale but Frontier Sandstone may be local aquifer	>7,000	NL	NL	NL
Abbreviations: ft = feet, approx = approximate, avg = average, gpm = gallons per minute, mg = milligrams, L = liters, and NL = not listed.						

Table information from Topper et al. (2003).

The Piceance Creek drainage basins upper and lower aquifers are separated by the semi-confining Mahogany Zone. Information presented in Topper et al. (2003) indicates the following approximate depths to potentiometric surfaces (elevation at which water level would have stood in tightly cased wells, 1985) within hydrogeologic units: upper Piceance basin aquifer 550 feet, lower Piceance basin aquifer 350 feet, and Mesaverde aquifer 250 feet (based on a surface elevation of 7,250 feet). Water well data from the Colorado Division of Water Resources (Topper et al., 2003) indicated that in central Rio Blanco County water wells are uncommon. Based on existing water well data near the project area, total concentration of dissolved constituents in the upper and lower aquifers is generally lower than 1000 milligrams per liter.

*Environmental Consequences of the Proposed Action:* Surface Water: Clearing, grading, and soil stockpiling activities may temporarily alter overland flow and natural groundwater

recharge patterns. Near-surface soil compaction caused by construction equipment and vehicles could reduce the soil's ability to absorb water and could increase surface runoff and the potential for ponding. The magnitude and duration of potential impacts to surface runoff and groundwater recharge would depend on soil depth, soil type, vegetation type and density, slope, aspect, erosive force of rainfall or surface runoff, and duration and extent of construction activities. Impacts would likely be greatest immediately following commencement of construction activities and would naturally decrease thereafter due to reclamation activities.

Toxic metals and organic substances that are relatively insoluble in water may be adsorbed on the surface of sediments and transported with sediment to surface waters further deteriorating water quality in stream segments 15 and 16 of the White River Basin. Salt deposition resulting from increased erosion may adversely impact the health of surrounding vegetation reducing effective ground cover and increasing the potential for soil erosion. In addition, salts deposits could be carried down gradient to surface waters of the Colorado River system deteriorating water quality.

Given the well pads close proximity to surface water in Piceance and Cow Creeks, any leaks or spills of environmentally unfriendly substances would be directly exposed to surface waters potentially deteriorating water quality.

Ground Water: In the event of any leaks or spills (drilling/frac fluids, diesel, pit contents, etc) local ground water would be adversely impacted as contaminants would infiltrate directly into the Piceance Creek alluvium. Potential for ground water contamination down hole increases if fractures in confining units are formed. Hydraulic conductivity increases exponentially along fracture zones resulting in rapid transport of fluids/contaminants in these areas. The upper and lower Piceance Basin aquifers have differing water qualities, mixing will degrade water quality in the upper aquifer which is generally of better quality. Storage or surface disposal methods (e.g. evaporation ponds) for produced water would also elevate potential for contaminating ground water of the Upper Piceance Basin Aquifer, and Piceance Creek Alluvial Aquifer.

*Environmental Consequences of the No Action Alternative:* None

*Mitigation:* The operator will be responsible for complying with all local, state, and federal water quality regulations (such as but not limited to Phase I Storm Water Permit, Army Corps Section 404 permit coverage, and Industrial Wastewater/Produced Water Permits).

Surface Water: It is recommended that all surface disturbing activities adhere to "Gold Book" fourth edition surface operating standards for oil and gas exploration and development (copies of the "Gold Book" fourth edition can be obtained at the WRFO). The operator will consult with the State of Colorado Water Quality Control Division regarding Stormwater Discharge Permits prior to commencing construction activities. Construction activities that disturb one acre or greater require a Stormwater Discharge Permit. Written documentation to the BLM Authorized Officer is required within 30 days of the APD approval date to indicate that appropriate permits have been obtained. Written documentation may be a copy of the Stormwater Discharge Permit or an official verification letter from the State Water Quality Control Division to the operator that includes the Permit Certification Number. For further information contact Nate Dieterich,

WRFO Hydrologist at 970-878-3831 or [Nathan\\_Dieterich@blm.gov](mailto:Nathan_Dieterich@blm.gov). Appropriate documents may be sent via electronic mail, faxed (970-878-3805), or mailed to Nate Dieterich at the above address.

The operator will consult with the US Army Corps of Engineers to obtain approval prior to discharging fill material into waters of the US in accordance with Section 404 of the Clean Water Act. Waters of the US are defined in 33 CFR Section 328.3. Written documentation to the BLM Authorized Officer is required within 45 days of the APD approval date to indicate that the US Army Corps of Engineers has been notified prior to construction or that 404 Permits have been obtained or are not required by the permitting agency. Written documentation may be a copy of the Pre-Construction Notification (PCN) Form or an official verification letter from the US Army Corps of Engineers to the operator stating that a permit has been issued or is not required for the activities in question. For further information contact Nate Dieterich, WRFO Hydrologist at 970-878-3831 or [Nathan\\_Dieterich@blm.gov](mailto:Nathan_Dieterich@blm.gov). Appropriate documents may be sent via electronic mail, faxed (970-878-3805), or mailed to Nate Dieterich at the above address.

To mitigate additional soil erosion at the well pad and potential increased sediment and salt loading to nearby surface waters impacting BLM reaches, interim reclamation is suggested *once drilling is completed*. To allow optimal opportunity for interim reclamation of well pads, all tanks and production facilities will be situated on the access road side of the well pad (unless otherwise approved by the BLM). Interim reclamation of well pads will commence as follows:

- Stockpiled topsoil and spoil piles will be separated to prevent mixing during reclamation efforts.
- Stockpiled topsoil segregated from spoil piles will be replaced during reclamation in its respective original position (last out, first in) to minimize mixing of soil horizons.
- Stockpiled soils (spoil and topsoil) will be pulled back over all disturbed surfaces outside the anchors and brought to near pre-construction contours.
- The operator will ensure stockpiled topsoil is evenly distributed over the **top** of spoil used in re-contouring efforts.
- The recontoured area will be seeded with a BLM approved seed mixture (see Vegetation section), and all slopes exceeding 5 % will be covered with wildlife friendly biodegradable fabrics (such as but not limited to Jute blankets, Curlex, ...) to provide additional protection to topsoil and help retain soil moisture.
- Following seeding and placement of biodegradable fabrics, woody debris cleared during initial construction will be pulled back over the recontoured area to act as flow deflectors and sediment traps. Woody debris will be evenly distributed over the entire portion of the reclaimed area and will not account for more than 20% of total ground cover.
- To eliminate livestock utilization of reclaimed areas prior to successful reclamation, a 4-strand BLM Type-D barbed wire fence with braced wooden corners will be constructed around all reclaimed portions of the well pad including cut and fill slopes following placement of woody debris.
- The operator will be required to monitor all reclaimed areas for signs of erosion and the presence of noxious and invasive plant species. If problems arise the operator will consult with the BLM for further assistance.
- It will be the responsibility of the operator to continue revegetation/reclamation efforts until the reclamation is proven successful (as determined by the BLM).

If interim reclamation is not practical (e.g. completion of drilling operation will require an extended period time (multiple well pads)), stockpiled topsoil should be segregated, signed, and covered with biodegradable fabrics such as (but not limited to) jute netting and seeded with a BLM approved seed mixture (see vegetation section of this document). Cut and fill slopes will be stabilized by vegetative and non-vegetative practices as identified in XTO's approved Stormwater Management Plan. Interim reclamation should proceed as outlined above once drilling is completed.

To protect water quality on downstream public lands, it is suggested that upon final abandonment of the well pad, 100% of all disturbed surfaces (access roads and pad locations) be restored to pre-construction contours, and revegetated with a BLM preferred seed mixture (see Vegetation section). Natural drainage patterns should be restored and stabilized with a combination of vegetative (seeding) and non-vegetative techniques (e.g. biodegradable fabrics, woody debris, straw waddles, etc). All *available* woody debris should be pulled back over recontoured areas (woody debris should not account for more than 20% of total surface cover) to help stabilize soils, trap moisture, and provide cover for vegetation. Monitoring and additional reclamation efforts should persist until reclamation is proven successful.

Ground Water: Shallow aquifers shall be protected from hydrofracturing and the production of oil and gas by installation and cementing of surface and intermediate casing. Any groundwater produced from the Fort Union or Mesaverde Formations will be hauled off and disposed of due to poor water quality and therefore preventing adverse impacts to valuable surface and ground water resources. Environmentally unfriendly substances (e.g. diesel, drilling fluids, and produced water) must not be allowed to contact soils. **The use of spill-guards (or equivalent spill prevention equipment) under and around pumping equipment will be required to intercept such contaminants prior to infiltrating soils and contaminating ground water.** Furthermore, all pits shall be lined and all wastes associated with construction and drilling will be properly treated and disposed of. In addition, to reduce the potential of contaminating surface waters on public lands downstream the proposed project area, no operations using chemical processes or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies (as outlined in Appendix B-1 of the White River RMP/ROD).

*Finding on the Public Land Health Standard for water quality*: Stream segments 15 and 16 of the White River Basin currently meet water quality standards set by the state. Many of the upper tributaries which are ephemeral and flow in direct response to storm events do not meet the standards during periods of flow. Following suggested mitigation measures, water quality in the affected stream segments should continue to meet standards.

## **WETLANDS AND RIPARIAN ZONES (includes a finding on Standard 2)**

*Affected Environment*: Well pad # 4S-95-1-21 is located primarily on private surface at the confluence of Piceance and Cow Creeks. The lower reach of Cow Creek (intermittent at the mouth) is xeric and composed of facultative species with no riparian affinity. Piceance Creek, which typically loses flow during the mid to late summer months at this point, supports narrow

margins of herbaceous bank vegetation, little of which is composed of obligate forms. Although relatively stable, the conditions of both channels suffer from summer draw downs (i.e., irrigation) and conflicting livestock grazing practices.

*Environmental Consequences of the Proposed Action:* The proposed location was approved by the surface owner and involves only privately-owned channel. Although riparian vegetation and channel function are generally poorly developed at this site, downstream conditions have been considered and stipulations attached to the Army Corps permit require that no fill material be allowed to enter the Piceance Creek channel, thereby avoiding direct influence on channel and riparian resources. The nearest downstream BLM-administered reach is separated from this action by over 30 stream miles.

*Environmental Consequences of the No Action Alternative:* The no-action alternative would have no conceivable influence on wetlands or riparian habitats.

*Mitigation:* None.

*Finding on the Public Land Health Standard for riparian systems:* Downstream portions of Piceance Creek are private with the nearest BLM-administered reach over 30 miles downstream. These private portions of the creek are generally stable, but due to land use practices their functional status is generally at-risk. As conditioned by stipulations imposed by the Army Corps, neither the proposed nor the no-action alternative would have any effective influence on the function or condition of the Piceance Creek channel, its riparian expression, or its land health status.

## **CRITICAL ELEMENTS NOT PRESENT OR NOT AFFECTED:**

No ACECs, flood plains, prime and unique farmlands, Wilderness, or Wild and Scenic Rivers exist within the area affected by the proposed action. For threatened, endangered and sensitive plant species Public Land Health Standard is not applicable since neither the proposed nor the no-action alternative would have any influence on populations of, or habitats potentially occupied by, special status plants. There are also no Native American religious or environmental justice concerns associated with the proposed action.

## **NON-CRITICAL ELEMENTS**

The following elements **must** be addressed due to the involvement of Standards for Public Land Health:

### **SOILS** (includes a finding on Standard 1)

*Affected Environment:* The following data is a product of an order III soil survey conducted by the NRCS. Table 3 highlights important soil characteristics. A complete summary of this information can be found at the White River Field Office.

**Table 3:**

Soil Number	Soil Name	Slope	Ecological site	Salinity	Run Off	Erosion Potential	Bedrock
36	Glendive fine sandy loam	2-4%	Foothills Swale	2-4	Slow	Slight	>60
73	Rentsac channery loam	5-50%	Pinyon-Juniper woodlands	<2	Rapid	Moderate to very high	10-20
96	Veatch channery loam	12-50%	Loamy Slopes	<2	Medium	Moderate to very high	20-40

Control surface use (CSU-1) “fragile soils” have been mapped on private property on the western edge of the proposed well pad. However, after on-site observations and assessing slope from a topographic map it was determined that no surface disturbing activities will occur on slopes greater than 35% on public lands. Approximately 50 feet of cut will occur on a steep side hill located on private surface. Because no surface disturbing activities will occur on “fragile soils” situated on public lands, controlled surface use stipulations will not be required.

*Environmental Consequences of the Proposed Action:* Clearing and grading of the well pad and access road will remove protective vegetative cover from the affected soils accelerating the erosion process. Grading, trenching, and backfilling activities could cause mixing of the soil horizons and could result in reduced soil fertility reducing revegetation potential. Water erosion of soils associated with construction activities will likely result in a net loss of valuable topsoil by sheet, rill, and gully erosion. Eroded topsoil and subsoil may increase sedimentation to surface waters down gradient disturbed areas. Increased sedimentation could adversely impact water quality and aquatic life.

Any leaks or spills of environmentally unfriendly substances (e.g. diesel fuel) could compromise the productivity of affected soils. Decreased soil productivity will hinder reclamation efforts and leave soils further exposed to erosional processes.

*Environmental Consequences of the No Action Alternative:* None

*Mitigation:* It is suggested that the operator will be responsible for segregating topsoil material and backfilling of topsoil in its respective original position (last out, first in) to assist in the reestablishment of soil health and productivity.

It is recommended that erosion and sediment control measures be installed on all slopes exceeding five percent to mitigate soil loss. Erosion and sediment control measures on BLM administered land will be maintained until stream banks and adjacent upland areas are stabilized.

All disturbed surfaces on BLM administered lands will be restored to natural contours and revegetated with the suggested seed mixture outlined in the Vegetation section of this EA. It is recommended that interim reclamation follow the mitigation outlined in the Water Quality portion of this document.

*Finding on the Public Land Health Standard for upland soils:* Infiltration and permeability rates will be reduced with increased soil compaction. Following proper mitigation techniques and reclamation procedures, soil health will remain unchanged from current conditions.

## **VEGETATION** (includes a finding on Standard 3)

*Affected Environment:* The affected BLM lands are a Foothill swale ecological site dominated by beardless bluebunch wheatgrass, basin wildrye and scattered basin big sagebrush.

*Environmental Consequences of the Proposed Action:* The proposed action is expected to remove all vegetation from 0.05 acres of BLM lands. In terms of plant community composition, structure and function, the principal negative impact over the long term would occur if cheatgrass or noxious weeds are allowed to establish and proliferate on the disturbed areas resulting from location, pipeline and access road construction and spread to adjacent lands.

*Environmental Consequences of the No Action Alternative:* There will be no change from the present situation.

*Mitigation:* Promptly revegetate all disturbed areas with Native Seed mix #5:

Native Seed mix #5		
Basin Wildrye (Magnar)	2	Foothill Swale, Sandy Swale, Swale Meadow
Western wheatgrass (Rosanna)	3	
Bluebunch wheatgrass (Secar)	1	
Thickspike wheatgrass (Critana)	2	
Fourwing saltbush (Wytana)	1	
Alternatives: Utah sweetvetch, globemallow		

Revegetation will commence immediately after construction and will not be delayed until the following fall. Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Drill seeding is the preferred method of application.

*Finding on the Public Land Health Standard for plant and animal communities* (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): Plant communities on and adjacent to the proposed location currently meet the Standard and are expected to continue to meet the Standard following implementation of the proposed action

## **WILDLIFE, AQUATIC** (includes a finding on Standard 3)

*Affected Environment:* Affected portions of Piceance Creek (all on private property) may be expected to support a simple invertebrate-based aquatic community during the spring and early summer months. There are no fishery values associated with this reach and riparian/floodplain conditions do not provide habitat amenable to the support of other vertebrate forms (e.g., amphibians, beaver).

*Environmental Consequences of the Proposed Action:* The immediate project vicinity, as influenced by prevailing land use, has little utility as aquatic habitat. The proposed action has been designed to avoid direct involvement of the Piceance Creek channel (e.g., fill placement, surface disturbance) and is not expected to contribute to the degradation of offsite habitats. Considering the location of this site (i.e., junction of two major roads) and current land uses, it is unlikely that the proposed action would have any further influence on the condition or potential utility of on-site or downstream aquatic habitats.

*Environmental Consequences of the No Action Alternative:* There would be no action authorized that would have any direct or indirect influence on downstream aquatic habitat.

*Mitigation:* None.

*Finding on the Public Land Health Standard for plant and animal communities* (partial, see also Vegetation and Wildlife, Terrestrial): Project site and downstream portions of Piceance Creek are private with the nearest BLM-administered reach over 30 miles downstream. Neither the proposed or no-action alternative would have any effective influence on the function or condition of the Piceance Creek channel, its aquatic habitat values, or its land health status.

## **WILDLIFE, TERRESTRIAL** (includes a finding on Standard 3)

*Affected Environment:* Under normal circumstances, the proposed location would be expected to serve summer range functions for deer and elk, with substantial use during the fall and extending into the early winter months. However, the steep surrounding slopes (50+ %), lack of intervening cover, and proximity of the two regularly traveled roads (25-300 feet) constrain the functional capacity of the surrounding area such that the site offers little meaningful utility as big game habitat.

Non-game wildlife using this area are likely relegated to disturbance-tolerant species that are not reliant on well-developed herbaceous understory conditions. These species are typically abundant and widespread in many habitat associations across the Resource Area and northwest Colorado; there are no narrowly endemic or highly specialized species known to inhabit those lands potentially influenced by this action.

*Environmental Consequences of the Proposed Action:* The proposed action would have no meaningful involvement of public lands (1/20 of an acre) and the longer term occupation of up to 6 acres of these privately owned bottomlands is expected to have little effective influence on the condition, extent, or utility of habitat available for local or seasonal populations of resident wildlife. The deep side hill cuts associated with this project would be localized and would not be expected to present an obstacle or barrier to wildlife movement.

*Environmental Consequences of the No Action Alternative:* There would be no action authorized that would have potential to affect resident wildlife populations or associated habitat.

*Mitigation:* None.

*Finding on the Public Land Health Standard for plant and animal communities* (partial, see also Vegetation and Wildlife, Aquatic): On a landscape scale, the project area meets the public land health standards for terrestrial animal communities. The proposed action is considered an incremental addition to those lands dedicated to mineral development, but would not detract measurably from continued meeting of the land health standard at the landscape scale.

**OTHER NON-CRITICAL ELEMENTS:** For the following elements, only those brought forward for analysis will be addressed further.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Access and Transportation		X	
Cadastral Survey	X		
Fire Management	X		
Forest Management	X		
Geology and Minerals			X
Hydrology/Water Rights			X
Law Enforcement		X	
Noise		X	
Paleontology			X
Rangeland Management	X		
Realty Authorizations	X		
Recreation		X	
Socio-Economics		X	
Visual Resources			X
Wild Horses	X		

## GEOLOGY AND MINERALS

*Affected Environment:* The surface geologic formation of the well locations is alluvium at # 4S-95-1-21. XTO's targeted zone is in the Mesaverde. During drilling potential water, oil shale, and gas zones will be encountered from surface to the targeted zone. Aquifers that will be encountered during drilling are the Perched in the Uinta, the A-groove, B-groove and the Dissolution Surface in the Green River formation. These aquifer zones along with portions of the Wasatch formation are known for difficulties in drilling and cementing. The wells are located on Federal oil and Gas Lease COC-61458. Well # 4S-95-1-21 is located on the eastern edge of the area identified in the ROD/RMP as available for oil shale leasing and development.

*Environmental Consequences of the Proposed Action:* The cementing procedure of the proposed action isolates the formations and will prevent the migration of gas, water, and oil between formations. This includes oil shale and coal zones. However, conventional recovery of

the coals is not considered feasible at the depths that are encountered in the well. Development of this well will deplete the natural gas resources in the targeted formation

*Environmental Consequences of the No Action Alternative:* The natural gas resources in the targeted zone would not be recovered at this time.

*Mitigation:* None

## HYDROLOGY AND WATER RIGHTS

*Affected Environment:* The proposed action is located in the Lower Piceance Creek Fifth level watershed. Stream flows in Piceance Creek and its tributaries generally peak in mid spring as a result of high elevation snowmelt and periodically during late summer and early fall in response to high intensity precipitation events. Approximately eighty percent of annual flows in Piceance Creek originates as discharge from alluvial and bedrock aquifers (Tobin, 1987). Ephemeral drainages flow only in direct response to snowmelt and intense summer and early autumn storms. Table 4 displays the average annual stream flows in Piceance Creek near the proposed project area.

**Table 4:**

USGS Gaging Station Piceance Creek below Rio Blanco, CO <b>09306007</b>	
Water Year	Average Annual Discharge (cfs)
1975	13.3
1976	9.98
1977	5.02
1978	9.68
1979	20.8
1980	20.0
1981	7.18
1982	8.04
1983	46.6
1984	55.0
1985	53.3
1986	44.9
1987	18.5
1988	12.7
1989	12.4
1990	5.29
1991	5.89
1992	6.50
1993	33.3
1994	8.70
1995	21.7
1996	17.6
1997	21.9
1998	45.2

Approximately 98% of the precipitation in the Piceance Basin is lost to evapotranspiration. The remaining water runs off rapidly and replenishes streamflow or recharges bedrock and alluvial aquifers. Ground water recharge areas generally are located in higher parts of the drainage basin. The recharge moves slowly laterally and downward into the upper aquifer system, passes through the Mahogany zone (leaky confining unit) and enters the lower aquifer system through fractures and solution openings. The water in the upper and lower aquifers moves horizontally through the basin to the discharge areas. In the Piceance drainage basin, the water eventually moves upward back through the aquifer system where it discharges into the valley-fill alluvial aquifer or emerges as springs in the stream valleys (Taylor 1987). No springs have been identified within 0.5 miles of any surface disturbing activities associated with the proposed actions.

The stream banks of Piceance Creek are generally composed of sand, silt, and clay particles that are less than about one-tenth of an inch in diameter. The bank materials erode easily when stream discharge increases during peak flow conditions. Bank erosion is probably most prominent during the spring snowmelt when high flows persist for several days. The bank material absorbs a large amount of water, becomes soft and easily removable, and sloughs into the stream in large clumps. The stream bed of Piceance Creek is composed of silt, sand, gravel, and occasional cobbles, with pockets of fine material where the velocity of the stream generally is slow. Coarse streambed materials normally move only under peak flow conditions (Norman 1987).

*Environmental Consequences of the Proposed Action:* Improper drainage from the well pad and access road will elevate sediment production from disturbed areas. Increased sediment loads to local surface water drainages will result in a sediment rich system. Sediment rich systems are characterized by deposition and high width to depth ratios (W/D ratio) (wide shallow channels). As the W/D ratio increases, the hydraulic stress against the banks also increases and bank erosion is accelerated. Increases in the sediment supply to the channel develop from bank erosion, reducing the systems capability to transport sediment. As a result, deposition occurs, further accelerating bank erosion, and the cycle continues (Rosgen, 1996).

Construction activities may disrupt natural surface and ground water flow patterns. Altered flow patterns could disrupt natural surface and ground water recharge/discharge patterns. Changes to natural recharge/discharge patterns could have adverse impacts on stream channel morphology, riparian areas and aquatic life.

*Environmental Consequences of the No Action Alternative:* None

*Mitigation:* Refer to mitigation in the Water Quality portion of this document.

## **PALEONTOLOGY**

*Affected Environment:* Well # 4S-95-1-21 well pad, access and well tie pipeline is located in an area generally mapped as the Parachute Creek member of the Green River

formation. The Parachute Creek member of the Green River has been classified by the BLM, WRFO as a Condition I formation meaning it is known to produce scientifically important fossil resources. However, the majority of the project appears to be located in an area that appears to be covered with Quaternary alluvium, except for one small corner of the well pad on the southwest corner.

*Environmental Consequences of the Proposed Action:* Well # 4S 95-1-21 well pad, access and well tie pipeline: If, at any time it becomes necessary to excavate into the underlying rock formation to construct the access road, level the well pad, excavate the reserve/blooiie pit or bury the well tie pipeline there is the potential to impact scientifically important fossil resources.

*Environmental Consequences of the No Action Alternative:* There would be no new impacts to fossil resources under the No Action Alternative.

*Mitigation:* 1. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing paleontological sites, or for collecting fossils. If fossil materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear to be of noteworthy scientific interest
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not feasible)

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

2. Any time it becomes necessary to excavate into the underlying rock an approved paleontological monitor shall be present at the beginning of such excavations

## **VISUAL RESOURCES**

*Affected Environment:* The proposed action would be located in an area with a VRM III classification. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

*Environmental Consequences of the Proposed Action:* Since the major portion of the proposed action is on private surface and not subject to BLM visual classifications and only 0.05 acres of the proposed action would be on BLM, the level of change to the characteristic landscape of public lands would be low. The objectives of the VRM III classification would be retained.

*Environmental Consequences of the No Action Alternative:* There would be no environmental impacts.

*Mitigation:* None

**CUMULATIVE IMPACTS SUMMARY:** This action is consistent with the scope of impacts addressed in the White River ROD/RMP. The cumulative impacts of these activities are addressed in the White River ROD/RMP for each resource value that would be affected by the proposed action.

#### **REFERENCES CITED:**

- Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Commission (WQCC), 2005a. Regulation No. 37 Classifications and Numeric Standards for Lower Colorado River Basin. Amended December 12, 2005 and Effective March 2, 2006.
- CDPHE-WQCC, 2006b. "Status of Water Quality in Colorado – 2006, The Update to the 2002 and 2004 305(b) Report," April 2006.
- CDPHE-WQCC, 2006c. "Regulation No. 93, 2006 Section 303(d) List Water-Quality-Limited Segments Requiring TMDLs," effective April 30.
- CDPHE-WQCC, 2006d. "Regulation No. 94, Colorado's Monitoring and Evaluation List," effective April 30.
- Bureau of Land Management (BLM). 2003. Shell Frontier Oil and Gas, Inc. Bureau of Land Management Land Exchange Environmental Assessment. CO-WRFO-O2-062-EA. White River Field Office, Meeker, CO.
- Norman, V. 1987. Suspended Sediment in the Piceance Basin, in Taylor, J., ed., Oil Shale, Water Resources, and Valuable Minerals of the Piceance Basin, Colorado: The Challenge and Choices of Development. US Geol. Surv. Prof. Paper 1310.
- Rosgen, Dave. 1996. Applied River Morphology. Wildland Hydrology, Pagosa Springs, Colorado: 5-21, 5-23 pp.
- Reed, Karen and Heidi Guy Hays

- 2006 Cultural Resource inventory of the Proposed XTO Federal Well 4(sic)-4S-95-1-21, Rio Blanco County, Colorado. SWCA Environmental Consultants, Broomfield Colorado.

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- 2006 Cultural resource inventory of the Proposed XTO Federal Well 1S-95-32-42, Rio Blanco County, Colorado. SWCA Environmental Consultants, Broomfield, Colorado.

Taylor, J., ed., Oil Shale, Water Resources, and Valuable Minerals of the Piceance Basin, Colorado: The Challenge and Choices of Development. US Geol. Surv. Prof. Paper 1310.

Tobin, R. 1987. Water Quality in the Piceance Basin, in Taylor, J., ed., Oil Shale, Water Resources, and Valuable Minerals of the Piceance Basin, Colorado: The Challenge and Choices of Development. US Geol. Surv. Prof. Paper 1310.

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Tweto, Ogden

- 1979 Geologic Map of Colorado. United States Geologic Survey, Department of the Interior, Reston, Virginia.

**PERSONS / AGENCIES CONSULTED:** None

**INTERDISCIPLINARY REVIEW:**

<b>Name</b>	<b>Title</b>	<b>Area of Responsibility</b>
Nate Dieterich	Hydrologist	Air Quality
Tamara Meagley	Natural Resource Specialist	Areas of Critical Environmental Concern
Tamara Meagley	Natural Resource Specialist	Threatened and Endangered Plant Species
Michael Selle	Archeologist	Cultural Resources Paleontological Resources
Mark Hafkenschiel	Rangeland Management Specialist	Invasive, Non-Native Species
Ed Hollowed	Wildlife Biologist	Migratory Birds
Ed Hollowed	Wildlife Biologist	Threatened, Endangered and Sensitive Animal Species
Melissa J. Kindall	Hazmat Collateral	Wastes, Hazardous or Solid
Nate Dieterich	Hydrologist	Water Quality, Surface and Ground Hydrology and Water Rights
Ed Hollowed	Wildlife Biologist	Wetlands and Riparian Zones
Chris Ham	Outdoor Recreation Planner	Wilderness
Nate Dieterich	Hydrologist	Soils
Mark Hafkenschiel	Rangeland Management Specialist	Vegetation
Ed Hollowed	Wildlife Biologist	Wildlife Terrestrial and Aquatic
Chris Ham	Outdoor Recreation Planner	Access and Transportation
Ken Holsinger	Natural Resource Specialist	Fire Management
Robert Fowler	Forester	Forest Management
Paul Daggett	Mining Engineer	Geology and Minerals
Robert Fowler	Rangeland Management Specialist	Rangeland Management
Penny Brown	Realty Specialist	Realty Authorizations
Chris Ham	Outdoor Recreation Planner	Recreation
Keith Whitaker	Natural Resource Specialist	Visual Resources
Melissa J. Kindall	Range Technician	Wild Horses

# **Finding of No Significant Impact/Decision Record (FONSI/DR)**

**CO-110-2006-115-EA**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)/RATIONALE:** The environmental assessment and analyzing the environmental effects of the proposed action have been reviewed. The approved mitigation measures (listed below) result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

**DECISION/RATIONALE:** It is my decision to approve the proposed action with the addition of the mitigation listed below.

## **MITIGATION MEASURES:**

1. The operator will be responsible for complying with all local, state, and federal air quality regulations as well as providing documentation to the BLM that they have done so. To minimize production of fugitive particulate matter (fugitive dust) from associated access roads, it is suggested that vehicle speeds not exceed 15 mph *or* dust plume should not be visible at appropriate designated speeds for road design. In addition, the application of a BLM approved dust suppressant (e.g. water or chemical stabilization methods) is recommended during dry periods when dust plumes are visible at speeds less than or equal to 15 mph. Surfacing access roads with gravels would also help mitigate production of fugitive particulate matter. It is recommended that land clearing, grading, earth moving or excavation activities be suspended when wind speeds exceed a sustained velocity of 20 miles per hour. It is recommended that disturbed areas be restored to original contours, and revegetated as outlined in the vegetation portion of this EA.
2. To reduce production of fugitive particulate matter originating from well pad and associated stockpiled soils (long term storage) interim reclamation is suggested as outlined in the water quality section of this document. If interim reclamation is not practical (e.g. completion of drilling operation will require an extended period time (multiple well pads)), stockpiled topsoil should be covered with biodegradable fabrics such as (but not limited to) jute netting/Curlex and seeded with a BLM approved seed mixture (see vegetation section of this document). Furthermore, it is recommended that soils stockpiled for short durations (e.g. during road/pipeline construction/maintenance) be wetted during dry periods to reduce production of fugitive particulate matter.

3. Construction equipment will be maintained in good operating condition to ensure that engines are running efficiently. Vehicles and construction equipment with emission controls will also be maintained to ensure effective pollutant emission reductions.
4. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:
  - whether the materials appear eligible for the National Register of Historic Places
  - the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
  - a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

5. Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.
6. The operator will be required to monitor the project area for a minimum of three years post disturbance and eradicate all noxious and invasive species which occur on site for the life of the project using materials and methods approved in advance by the Authorized Officer.
7. It will be the responsibility of the operator to effectively preclude migratory bird access to, or contact with, reserve pit contents that possess toxic properties (i.e., through ingestion or exposure) or have potential to compromise the water-repellent properties of birds' plumage. Exclusion methods may include netting, the use of "bird-balls", or other alternative methods that effectively eliminate migratory bird contact with pit contents and meet BLM's approval. It will be the responsibility of the operator to notify the BLM of the method that will be used to eliminate migratory bird use two weeks prior to initiation of drilling activities. The BLM-approved method will be applied whenever such pits contain fluids other than fresh water. All lethal and non-lethal events that involve migratory birds will be reported to a White River Field Office Petroleum Engineer Technician immediately.

8. The applicant shall be required to collect and properly dispose of any solid waste generated by the proposed actions.
9. The operator will be responsible for complying with all local, state, and federal water quality regulations (such as but not limited to Phase I Storm Water Permit, Army Corps Section 404 permit coverage, and Industrial Wastewater/Produced Water Permits).
10. Surface Water: It is recommended that all surface disturbing activities adhere to “Gold Book” fourth edition surface operating standards for oil and gas exploration and development (copies of the “Gold Book” fourth edition can be obtained at the WRFO). The operator will consult with the State of Colorado Water Quality Control Division regarding Stormwater Discharge Permits prior to commencing construction activities. Construction activities that disturb one acre or greater require a Stormwater Discharge Permit. Written documentation to the BLM Authorized Officer is required within 30 days of the APD approval date to indicate that appropriate permits have been obtained. Written documentation may be a copy of the Stormwater Discharge Permit or an official verification letter from the State Water Quality Control Division to the operator that includes the Permit Certification Number. For further information contact Nate Dieterich, WRFO Hydrologist at 970-878-3831 or [Nathan\\_Dieterich@blm.gov](mailto:Nathan_Dieterich@blm.gov). Appropriate documents may be sent via electronic mail, faxed (970-878-3805), or mailed to Nate Dieterich at the above address.
11. The operator will consult with the US Army Corps of Engineers to obtain approval prior to discharging fill material into waters of the US in accordance with Section 404 of the Clean Water Act. Waters of the US are defined in 33 CFR Section 328.3. Written documentation to the BLM Authorized Officer is required within 45 days of the APD approval date to indicate that the US Army Corps of Engineers has been notified prior to construction or that 404 Permits have been obtained or are not required by the permitting agency. Written documentation may be a copy of the Pre-Construction Notification (PCN) Form or an official verification letter from the US Army Corps of Engineers to the operator stating that a permit has been issued or is not required for the activities in question. For further information contact Nate Dieterich, WRFO Hydrologist at 970-878-3831 or [Nathan\\_Dieterich@blm.gov](mailto:Nathan_Dieterich@blm.gov). Appropriate documents may be sent via electronic mail, faxed (970-878-3805), or mailed to Nate Dieterich at the above address.
12. To mitigate additional soil erosion at the well pad and potential increased sediment and salt loading to nearby surface waters impacting BLM reaches, interim reclamation is suggested *once drilling is completed*. To allow optimal opportunity for interim reclamation of well pads, all tanks and production facilities will be situated on the access road side of the well pad (unless otherwise approved by the BLM). Interim reclamation of well pads will commence as follows:
  - Stockpiled topsoil and spoil piles will be separated to prevent mixing during reclamation efforts.
  - Stockpiled topsoil segregated from spoil piles will be replaced during reclamation in its respective original position (last out, first in) to minimize mixing of soil horizons.
  - Stockpiled soils (spoil and topsoil) will be pulled back over all disturbed surfaces outside the anchors and brought to near pre-construction contours.

- The operator will ensure stockpiled topsoil is evenly distributed over the **top** of spoil used in re-contouring efforts.
  - The recontoured area will be seeded with a BLM approved seed mixture (see Vegetation section), and all slopes exceeding 5 % will be covered with wildlife friendly biodegradable fabrics (such as but not limited to Jute blankets, Curlex, ...) to provide additional protection to topsoil and help retain soil moisture.
  - Following seeding and placement of biodegradable fabrics, woody debris cleared during initial construction will be pulled back over the recontoured area to act as flow deflectors and sediment traps. Woody debris will be evenly distributed over the entire portion of the reclaimed area and will not account for more than 20% of total ground cover.
  - To eliminate livestock utilization of reclaimed areas prior to successful reclamation, a 4-strand BLM Type-D barbed wire fence with braced wooden corners will be constructed around all reclaimed portions of the well pad including cut and fill slopes following placement of woody debris.
  - The operator will be required to monitor all reclaimed areas for signs of erosion and the presence of noxious and invasive plant species. If problems arise the operator will consult with the BLM for further assistance.
  - It will be the responsibility of the operator to continue revegetation/reclamation efforts until the reclamation is proven successful (as determined by the BLM).
13. If interim reclamation is not practical (e.g. completion of drilling operation will require an extended period time (multiple well pads)), stockpiled topsoil should be segregated, signed, and covered with biodegradable fabrics such as (but not limited to) jute netting and seeded with a BLM approved seed mixture (see vegetation section of this document). Cut and fill slopes will be stabilized by vegetative and non-vegetative practices as identified in XTO's approved Stormwater Management Plan. Interim reclamation should proceed as outlined above once drilling is completed.
14. To protect water quality on downstream public lands, it is suggested that upon final abandonment of the well pad, 100% of all disturbed surfaces (access roads and pad locations) be restored to pre-construction contours, and revegetated with a BLM preferred seed mixture (see Vegetation section). Natural drainage patterns should be restored and stabilized with a combination of vegetative (seeding) and non-vegetative techniques (e.g. biodegradable fabrics, woody debris, straw waddles, etc). All *available* woody debris should be pulled back over recontoured areas (woody debris should not account for more that 20% of total surface cover) to help stabilize soils, trap moisture, and provide cover for vegetation. Monitoring and additional reclamation efforts should persist until reclamation is proven successful.
15. Ground Water: Shallow aquifers shall be protected from hydrofracturing and the production of oil and gas by installation and cementing of surface and intermediate casing. Any groundwater produced from the Fort Union or Mesaverde Formations will be hauled off and disposed of due to poor water quality and therefore preventing adverse impacts to valuable surface and ground water resources. Environmentally unfriendly substances (e.g. diesel, drilling fluids, and produced water) must not be allowed to contact soils. **The use of spill-guards (or equivalent spill prevention equipment) under and around pumping equipment will be required to intercept such contaminants prior to infiltrating soils and**

**contaminating ground water.** Furthermore, all pits shall be lined and all wastes associated with construction and drilling will be properly treated and disposed of. In addition, to reduce the potential of contaminating surface waters on public lands downstream the proposed project area, no operations using chemical processes or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies (as outlined in Appendix B-1 of the White River RMP/ROD).

16. It is suggested that the operator will be responsible for segregating topsoil material and backfilling of topsoil in its respective original position (last out, first in) to assist in the reestablishment of soil health and productivity.
17. It is recommended that erosion and sediment control measures be installed on all slopes exceeding five percent to mitigate soil loss. Erosion and sediment control measures on BLM administered land will be maintained until stream banks and adjacent upland areas are stabilized.
18. All disturbed surfaces on BLM administered lands will be restored to natural contours and revegetated with the suggested seed mixture outlined in the Vegetation section of this EA. It is recommended that interim reclamation follow the mitigation outlined in the Water Quality portion of this document.
19. Promptly revegetate all disturbed areas with Native Seed mix #5:

Native Seed mix #5		
Basin Wildrye (Magnar)	2	Foothill Swale, Sandy Swale, Swale Meadow
Western wheatgrass (Rosanna)	3	
Bluebunch wheatgrass (Secar)	1	
Thickspike wheatgrass (Critana)	2	
Fourwing saltbush (Wytana)	1	
Alternatives: Utah sweetvetch, globemallow		

Revegetation will commence immediately after construction and will not be delayed until the following fall. Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Drill seeding is the preferred method of application.

20. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing paleontological sites, or for collecting fossils. If fossil materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:
  - whether the materials appear to be of noteworthy scientific interest
  - the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not feasible)

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the

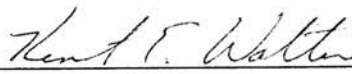
required mitigation has been completed, the operator will then be allowed to resume construction.

21. Any time it becomes necessary to excavate into the underlying rock an approved paleontological monitor shall be present at the beginning of such excavations

**COMPLIANCE/MONITORING:**

**NAME OF PREPARER:** Keith Whitaker

**NAME OF ENVIRONMENTAL COORDINATOR:**

**SIGNATURE OF AUTHORIZED OFFICIAL:**   
Field Manager

**DATE SIGNED:** 07/20/06

**ATTACHMENTS:** General Location Map of the Proposed Action

# Location of Proposed Action CO-110-2006-115-EA

